Claims

1. An apparatus for securing a stack of sheet-shaped materials during a rotary movement around an axis of rotation comprising:
first and second clamping jaws;
a drive for driving the clamping the jaws to clamp on the stack of sheet-shaped materials,
wherein the first and second clamping jaws are mounted such that the stack of sheet-shaped materials is always aligned to half its stack thickness.

2. An apparatus according to Claim 1, wherein the clamping jaws rotate the stack of sheet-shaped materials and the rotation is carried out around an axis of rotation (R) that is normal to the plane of the sheet-shaped materials.

3. An apparatus according to one of Claim 1, wherein the sheet-shaped materials hang vertically between the clamping jaws.

4. An apparatus according to one of Claim 1, wherein the apparatus is open on at least one side.

5. An apparatus according to one of Claim 1, wherein the center of gravity of the apparatus coincides about with axis of rotation (R).

6. An apparatus according to one of Claim 1, wherein the drive is only active during the closing movement and the opening movement of the first and second clamping jaws.

7. An apparatus according to one of Claim 1, further comprising a worm gear and wherein the drive drives the worm gear and translates the rotary drive movement into a linear movement.

8. An apparatus according to Claim 7, in an open state or in a closed state, worm gear engages just behind the slack points.

9. An apparatus according to one of Claim 7, wherien the worm gear prestresses a common spring assembly for moving the clamping jaws.

10. An apparatus according to one of Claim 1, wherein at least one of clamping jaws has a spring-loaded rocker in order to compensate variations in thickness within the stack of sheet-shaped materials.

11. An apparatus according to one of Claim 1, wherein the clamping jaws extend over the entire length (L) of the sheet-shaped materials and the transmission of force for moving the clamping jaws is carried out by means of tong levers, whereby these tong levers are mounted, so that they can move, on the clamping jaws at the center of the length of the clamping jaws.

12. An apparatus according to Claim 11, wherein the clamping jaws are mounted at both ends on the housing of the apparatus by means of tension springs so that they float.

13. An apparatus according to one of Claim 1, wherein the drive is a stepper motor that applies the same torque continuously during clamping, independently of the stack thickness (D).

14. An apparatus according to Claim 13, wherein the drive drives two cams, whereby the cams have a curve surface such that an adaptation of the holding force to stack thickness (D) of the stack of sheet-shaped materials is carried out by the pitch of cams.

15. An apparatus according to one of Claim 1, wherein further comprising at least one sensor that determines the position of the apparatus or the presence of a stack of sheet-shaped materials.

16. A method for handling stacks of sheet-shaped materials comprising the steps of:

accepting a vertically arranged stack of sheet-shaped materials;

aligning the stack to half the stack thickness (D), using a first transport unit;

rotating and transporting the stack of sheet-shaped materials around an axis of rotation (RN) that is normal to the plane of the sheet-shaped materials;

accepting the rotated stack of sheet-shaped materials by a second transport unit;

rotating and transporting of the stack of sheet-shaped materials around an axis of rotation (RP) that is parallel to the plane of the sheet-shaped materials with the additional transport unit; and,

placing the stack of sheet-shaped materials on a tray.

17. A method for handling stacks of sheet-shaped materials comprising the steps of:

accepting a vertically arranged stack of sheet-shaped materials that is aligned to one outer side of the stack using a first transport unit ;

transporting and aligning the stack of sheet-shaped materials during transporting, whereby the alignment of the stack comprises alignment of the stack to half the stack thickness;

rotating and transporting the stack of sheet-shaped materials around an axis of rotation (RN) that is normal to the plane of the sheet-shaped materials;

accepting the rotated stack of sheet-shaped materials by a second transport unit;

rotating and transporting of the stack of sheet-shaped materials around an axis of rotation (RP) that is parallel to the plane of the sheet-shaped materials with the additional transport unit; and,

placing the stack of sheet-shaped materials on a tray.

18. A method according to Claim 17, wherein the accepting step comprises acceptance of a vertically arranged stack of sheet-shaped materials that is made available manually.

19. A method according to claim 17, wherein while the stack is being accepted, the stack thickness (D) is determined and utilized by a controller.

20. A method according to claim 16, wherein the step of the second combined rotation and transport of the stack of sheet-shaped materials results in an alternate placement of the stacks of sheet-shaped materials on the tray.